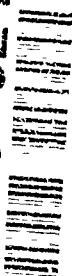
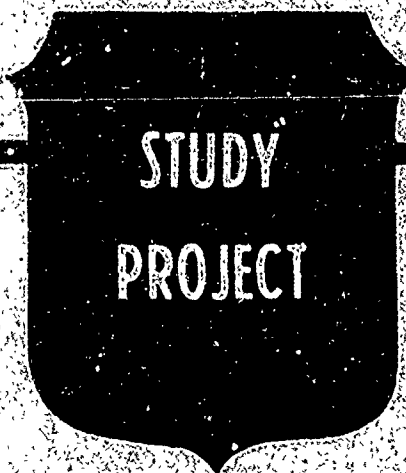


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AIR DEFENSE AT THE OPERATIONAL LEVEL  
IN THE DOWN-SIZED ARMY

BY

LIEUTENANT COLONEL JACK W. CARTER, JR.  
United States Army

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The purpose of this paper is to look at Air Defense Artillery's future requirements at the corps level in what has become the Army's primary focus--contingency operations. The paper argues that while the organizational future of Air Defense appears to be well in hand, there is immediate attention required in liaison and coordination, in logistical support, and in doctrine.

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AIR DEFENSE AT THE OPERATIONAL LEVEL  
IN THE DOWN-SIZED ARMY

AN INDIVIDUAL STUDY PROJECT

by

Lieutenant Colonel Jack W. Carter, Jr., AD

Colonel Robert B. Tinsman, AD  
Project Adviser

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U.S. Army War College  
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## ABSTRACT

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Despite events in the Middle East, the Army is faced with a force structure reduction of at least 25% and reductions in research, development, and acquisition accounts. Faced with these reductions, Gen. Vuono has stated that we will maintain an Army with the proper force structure, fully modernized, well led, doctrinally sound, trained and with quality people. That will be a challenge for the Army but an even greater challenge for Air Defense. Air Defense has lagged behind the rest of the Army in modernization and in force structure at the corps level.

The American Army has fought with virtual air superiority since the early days of World War II. We tend to focus on our most recent experience. There is concern that because the Air Force performed as advertised in Desert Storm, air defense will not have to be employed in its traditional role of defeating an enemy air breathing threat. The ineffectiveness of the Iraqi air threat does not mean you can ignore future threats. Failure to recognize potential future threats and to structure a force to counter that threat could be dangerous. As one speaker at the USAWC stated, the greatest lesson from Desert Shield/Storm was that it happened.

The purpose of this paper is to look at Air Defense Artillery's future requirements at the corps level in what has become the Army's primary focus -- contingency operations. The paper argues that while the organizational future of Air Defense appears to be well in hand, there is immediate attention required in liaison and coordination, in logistical support, and in doctrine.

## AIR DEFENSE AT THE OPERATIONAL LEVEL IN THE DOWN-SIZED ARMY

### INTRODUCTION

The fall of 1989 began a period of monumental change in world order. In November the Berlin Wall, the major symbol of communism, first cracked, then along with the Iron Curtain collapsed. During the December 1989 summit in Malta, General Secretary Gorbachev said "The world is leaving an era of cold war and entering another. This is just the beginning . . . of a long peaceful period."<sup>1</sup> President Bush and Gorbachev agreed to complete a conventional force reduction (CFE) treaty by the end of 1990.<sup>2</sup> Freedom was breaking out all over Eastern Europe. The world we had known for the last 45 years would never be the same.

Conventional force reduction talks had been going on since 1973.<sup>3</sup> While the discussions focused primarily on cutting NATO forces 10-15%, the proposed reductions would obviously have to be applied to all U.S. forces. The events in Europe gave the reduction talks a life of their own. Larger defense cuts were discussed. Congress began to feel extreme political pressure to reduce the federal budget deficit and saw the "peace dividend" as their best weapon. Faced with the pressure, the

Army developed a planned reduction of 35,000 troops per year over 5 years. During testimony before the House Armed Services Committee, Gen. Carl Vuono, Chief of Staff of the Army".<sup>4</sup>

Representative Leu Aspin, panel chairman, retorted that given the new world order, the Army plan was simply not good enough.<sup>5</sup> That thought process had been fueled by the earlier testimony of Lawrence Korb, a former assistant Secretary of Defense for Manpower. Testifying before the Senate budget committee, he suggested the Army could be cut in half over the next five years.<sup>6</sup>

That was the environment in Washington on 2 August 1990 when Iraq invaded Kuwait, and the U.S. initiated Operation Desert Shield. The invasion's long term impact on force structure will not be known for some time. However, the cuts will still occur, and they will be deep and painful. While elements in the Pentagon continue to plan, coordinate, and direct operations in the Middle East, force developers throughout the Army must take a hard look at the future force structure requirements. Every branch will be defending their turf, not only in weapons development and procurement, but also in pure total bottom line numbers of spaces.

The purpose of this paper is to look at Air Defense Artillery's future requirements in what has or will become the



Army's primary focus -- contingency operations. This will entail an examination of work being done by the United States Army Air Defense School (USAADSCH), a historical look at Air Defense in the corps, a review of Air Defense structure as it has evolved from the Total Army Analysis (TAA) 96 approved force structure, and the direction that TAA 99 appears headed. Additionally, I will incorporate some observations based on lessons learned from experience in corps operations, from joint exercise Roving Sands SO, and from Desert Shield/Storm. Finally, I will draw some conclusions and make recommendations concerning the future of Air Defense.

#### BACKGROUND

To begin the analysis, you must first examine the overall structure of the Army. Gen. Vuono provided his vision of how the Army will meet the challenges of the future in a January 1990 white paper. He stated that the future Army will have to be versatile, deployable, lethal, and support a coalition based strategy. We would not be able to go it alone.

He defined the versatile Army in terms of a proper mix of heavy, light and special operations forces proportioned between the Active Component (AC) and Reserve Components (RC) -- forces that could be tailored in packages without major train-up delays. The deployable Army will have to rapidly project

forces, on short notice, to protect world wide U.S. and Allied interests. Finally, his lethal Army will be modernized, technologically advanced, combat ready forces grounded in up-to-date doctrine.<sup>7</sup>

Delivered eight months before the start of Desert Shield, Gen. Vuono's comments could not have been more prophetic. It was, however, only a broad view of the force of the future. That vision coupled with his six imperatives -- attracting and retaining high quality people; maintaining sound warfighting doctrine; maintaining the appropriate force structure, size, and mix; tough, realistic training; continual modernization; and competent, confident leaders<sup>8</sup> -- give our force developers the general guidance to begin their work. Still, it is the bottom line number -- a number that will apparently be between 520,000 and 580,000 -- that drives the train. What will our Army look like with those numbers, and how will we restructure the RC (whose numbers may be slightly larger than those of the AC)? What approach or approaches are being used? Will it be top down or bottom up, threat or mission based? Most importantly, will the force support our national strategic objectives, and what will we decide is the acceptable risk? (There will be a risk because a constrained force cannot be all things to all people.) Procedurally, the answer is the TAA process.

## TAA

"Army force planning focuses on the policy, guidance, and force requirements established by the National Command Authority and the Department of Defense (DOD). It centers on the threat and national objectives and goals. It also provides a means to progress from the very broad conceptual view of national defense to the specifics of units and force structure. Risk assessments and resource constraints are considered while determining these specifics."<sup>9</sup>

The preceding paragraph from FM 100-11, Force Integration, describes the force planning process that results in the Army Plan (TAP). TAP is the realistic, manpower and dollar constrained force displayed in numbers and types of divisions, separate brigades, and other special forces. This is only the first step. The combat forces found in the TAP are run through a computer simulation war game, taking the force from deployment through warfighting. The Total Army Analysis adds all the support structure and produces a force that is doctrinally sound and sustainable.<sup>10</sup> Unfortunately, deployability has not always been a major concern. Until recently, the main focus was on war in Europe, and the TAA's have developed forces reflecting that specific threat. A number of speakers at the U.S. Army War College have indicated

that new scenarios are being developed that will focus more on the contingency role with less emphasis on Europe. Operation Desert Shield will provide real data to construct new scenarios, but it would be dangerous to focus solely on Southwest Asia (SWA). The rest of the world provides ample opportunities for future confrontation. As Gen. Vuono indicated in his White Paper, sophisticated weaponry has proliferated with developing countries having forces that include not only significant numbers of modern armor and aircraft but also missile systems capable of delivering chemical warheads.<sup>12</sup> This threat will be discussed in more detail later, but for now, suffice to say that the planning process is more complicated than ever.

The TAA force is scrubbed and analyzed by force developers from all the MACOM's to ensure that it is affordable and executable (resources are available). Finally, after the analysis is completed, the results become the basis for the Program Objective Memorandum (POM) -- a six-year program that is the Army blueprint for implementing actions ranging from activations/inactivations to equipment acquisition/modernization.

All Defense battalion requirements are identified during the TAA as 1) organic to the division (by type of division),

2) organic to the brigade that supports a corps, 3) organic to a separate armor or infantry brigade or air defense brigades [normally done off line because the rules do not readily identify echelons above corps (EAC) combat units.]

I will not address divisional air defense battalions. Those battalions are governed by relatively straight forward allocation rules wherein all AC divisions have an AC air defense battalion (except the 6th Infantry Division [light] which has an RC battalion). I will address their operational connection to the corps units, but their existence is essentially a given and not an issue.

It is at the corps and above that air defense force structure has been very hazy. Only recently has the Army come to grips with the need to identify and resource air defense units as an integral part of the corps. The Army's war fighting doctrine is found in FM 100-5, Operations. Called Airland Battle, it recognizes the three-dimensional nature of the battlefield and places great emphasis on the corps.<sup>12</sup> Corps commanders have looked around and found their ability to effect the air war lacking. The Army began to correct this deficiency in the mid-1980's with the activation of the 35th AD Brigade in I Corps and the 1988 activation of the 31st AD Brigade in III Corps. Ironically, neither of the corps

deployed in Europe (V and VII) nor the main contingency corps (XVIII), have their own organic AD brigades. There are four brigades in Europe, but they are EAC and only liaison with the two corps. There has been a brigade in CONUS for years. That brigade, the 11th AD Brigade, has had its primary mission argued continuously. Even as late as June 1990, the brigade's battalions were allocated individually to CINC war plans and both the Third U.S. Army (TUSA) and XVIII Corps laid claim to the brigade.

The TAA 96 process appeared to have resolved the shortfall by identifying and resourcing a brigade for all the corps and both TUSA and Pacific Command. The brigade headquarters were resourced as either active component (COMPO 1) or Army National Guard (COMPO 2). The individual battalions were COMPO 1 or 2 and in a few instances required but unresourced (COMPO 4). There were no U.S. Army Reserve (COMPO 3) units in the structure.<sup>13</sup>

The potentially massive cuts in force structure in search of the "peace dividend" could unhinge what had been accomplished by air defense. Secretary of Defense, Dick Cheney, and Chairman of the Joint Chiefs of Staff, Gen. Colin Powell, have proposed a plan that would have an Atlantic Force oriented toward Europe, a Pacific Force oriented toward the Far

East, and a Contingency Force oriented toward Third World conflicts, terrorism, and force projection -- each force combining elements of all services. The final piece in their proposal is the Strategic Force -- the nuclear capability. This proposal was made in June 1990.<sup>14</sup> A number of Department of Defense experts speaking at the USAWC have indicated a variety of methods the Army will use to implement and control the force reductions. The consensus would appear to be a shift to a more CONUS-based contingency force. The Army will have 12 to 14 divisions allocated to four corps vice the current five.<sup>15</sup> There will be one corps forward deployed in Europe (probably VII), one contingency corps (XVIII), one reinforcing corps (III), and one sustainment corps (I).

According to force structure analysis at Ft. Bliss, air defense will fair well in this restructuring process. What was accomplished in TAA 96 may not be completely broken. The four corps are reflected in a proposed revision to TAA 99 (actually 2000, but 00 is not used) that begins to align the force with a new doctrine -- Airland Battle Future.

In November 1990, Ft. Bliss analysts indicated an air defense brigade would support the forward deployed, reinforcing, and sustainment corps. Each brigade was to be composed of a brigade headquarters, three Avenger battalions

(replacing current Chaparral battalions), one Hawk battalion, and one Patriot battalion. The sustainment corps brigade will be RC -- the other two will be AC. The internal AC/RC mix may still be driven by space constraints. The contingency corps brigade was to be beefed up by doubling the number of Hawk and Patriot battalions. Additionally, there was to be an EAC headquarters -- an army air defense command (AADCOM) -- to command and control three EAC brigades, each structured like the contingency brigades. The AADCOM could support any theater and would be deployed if forces in excess of the corps air defense brigade were required. That was a significant capability that is lacking in today's structure and has proven to be a problem in Operation Desert Shield/Storm.

By February 1991, only three months later, the position had changed. The Ft. Bliss analysts now indicate each corps, including the contingency corps, will have a standard brigade composed of a headquarters, one Patriot, one Hawk and three Avenger (currently Chaparral) battalions. The AADCOM headquarters has been eliminated, but there are four EAC brigades missioned to Third Army, USAREUR, WESTCOM, and SOUTHCOM. This organization seems to provide the required support to the corps but, more importantly, aligns with the requirements of the warfighting CINC's.<sup>16</sup>



## HISTORICAL VIEW

The organizational chart for the first two corps brigades (the 31st and 35th) consisted of an AC headquarters battery, an AC Hawk and an AC Chaparral battalion, two RC Chaparral battalions, and a Compo 4 Gun/Stinger battalion. The systems to form the Chaparral battalions were to come from existing AC divisional air defense battalions. The Chaparral systems were to be made available as a result of the fielding of the SGT York divisional air defense gun. The SGT York would have replaced both the Vulcan and the Chaparral systems. Cancellation of the SGT York weapons program slowed but did not stop the formation of the corps Chaparral battalions. FORSCOM divisional battalions reorganized to pure Vulcan/Stinger and the Chaparrals were transferred and formed into battalions at Ft. Ord (later restationed to Ft. Lewis) for I Corps, at Ft. Hood for III Corps, and at Ft. Stewart for 11th AD Brigade. Five national guard Chaparral battalions were activated in New Mexico. An additional battalion is planned for activation in Arkansas. The divisional battalions in Europe did not reorganize, and no Chaparral battalions were activated for the European corps.

Sufficient Hawk battalions existed to resource I Corps and III Corps with one battalion each and two battalions for 11th

AD Brigade. Only a restationing of a battalion from Ft. Bliss to Ft. Hood was required to get the corps brigades operational.

The initial planning did not include any Patriot at the corps level. Patriot had been fielded as a theater level asset designed primarily to counter the massive Soviet air threat in Europe. The three CONUS-based Patriot battalions were all troop listed as NATO assets. No other CINC could plan on having the fire power of a Patriot battalion available to his theater. This was a serious error in force allocation. It would eventually be corrected. The initial correction was not in the design of the brigade but rather through the individual allocation of battalions in the Army Mobilization and Operations Planning System (AMOPS). But allocating off-line in the AMOPS did not fix the problem. Recognition of Patriot as a corps asset was the answer. That has been accomplished in TAA 99 and is evident in the deployments in support of Desert Shield. Four days after being alerted and only ten days after the Iraqi invasion, a C-5 transport departed Ft. Bliss with a Patriot launch capability and several Stinger teams to provide self defense.<sup>17</sup> Between 7 August 1990 and 6 September 1990, there was 485 missions flown by C-5's in support of Desert Shield.<sup>18</sup> Given the critical shortage of C-5 transports, early allocation of those assets to get Patriot on the ground in

Saudi Arabia is a clear indication of the importance that warfighting CINCs place in the capabilities of air defense. The success that Patriot experienced early in Desert Storm validated their confidence.

## THE BRIGADE

The final design and the doctrinal employment of a corps air defense brigade will continue to evolve as the Army's future force structure evolves and as the lessons of Desert Shield and Desert Storm are evaluated. The USAADSCH is in the final stages of publishing its first manual on operations of an ADA brigade in support of a corps. FM 44-71, with a final draft date of January 1990 (it still is not final), lays out the emerging doctrine. According to that document, the brigade, in conjunction with a joint counter-air team:

"Controls the corps air environment by fire to assure freedom of maneuver; protects key forces, facilities and reserves from air attack; reinforces divisional ADA to ensure corps military success; participates in corps deep operations to selectively kill and disrupt threat air operations at depth; synchronizes all combined, joint, EAC, and corps air defense operations supporting the corps battle."<sup>19</sup> The brigade will obviously support the corps in close, rear, and deep operations. But

consensus is that the Army will focus on contingency operations.

Because a contingency corps may be deployed anywhere in the world, its organization, including the air defense brigade, must be flexible. The XVIII Airborne Corps, the Army's contingency corps, has reflected that flexibility with its 82d Airborne Division, 101st Air Assault Division, 7th Infantry Division (Light), and the 24th Infantry Division (Mechanized). The future corps will likely add another heavy division although one USAWC speaker spoke of the desire to have two contingency corps -- one heavy and one light. This organization allows the corps to respond across the entire spectrum of conflict. It has demonstrated that flexibility during both Just Cause, which oriented on light forces, and Desert Shield/Desert Storm, which has been heavy force oriented. The air defense brigade must have the capability to respond with the corps, anywhere, against any threat.

The major problem will be that in an environment of shrinking resources, meeting the challenges will become increasingly difficult. Even before the recent push to reduce the defense budget, there was concern that air defense had not historically fared well in weapons system funding. In 1989, the Air Defense Modernization Plan identified a requirement to

spend \$30 billion between 1990 and 2006 on equipping and modernizing air defense forces. Unfortunately, predictions called for funding levels half that amount. Pentagon officials indicated this was "consistent with a pattern of putting air defense capability on the back burner."<sup>20</sup> While the Army has stated a balanced approach to reductions, there was concern that attempts to protect force structure as the budget decreases will result in shortfalls in modernization plans. While Gen. Vuono has stated that continued modernization is an imperative, the Army has identified a need to modernize the aviation fleet (the Light Helicopter Experimental [LHX] and the tank fleet, both of which are expensive programs competing with air defense for dollars.<sup>21</sup> Faced with this, the air defense will attempt to meet future requirements. But there is much more to consider than dollars.

#### THE THREAT

Gen. Vuono made reference to the threat in his White Paper. The capabilities of the Soviet Union have long been considered to be very formidable. While the threat to Western Europe may be reduced (not totally eliminated), the Soviets exported weapons and technology to many of the developing nations of the world. But the Soviets were not alone in these

ventures as the United States, France, Great Britain and others have also exported significant weapons capabilities. Although these Third World client states do not have the sheer numbers of weapons held by the Soviet Union, they have sufficient numbers and lethality to be quite dangerous. Iraq is the classic example. They had T-72 tanks, MIG-29's, SCUD missiles, and a million-man army. More importantly, they were willing to use the force. During the Iraq-Iran war, Iraq was supported by the West because they were viewed as more moderate than Iran. The truth sometimes changes.

But it is the threat of chemical and possibly even nuclear weapons that have generated the most concern. Iraq has used chemical weapons and has doggedly pursued the technology to gain the use of nuclear weapons. Iraq is not alone. Estimates place the number of countries possessing chemical weapons programs at twenty.<sup>22</sup> These weapons are the poor man's means of mass destruction. Unfortunately, the technology for these weapons is being sought by other, less than stable, countries such as Libya, Iran, and Syria.<sup>23</sup> Syria used hydrogen cyanide in 1982.<sup>24</sup> Iraq used chemical weapons extensively against Iran during their eight-year war, and in March 1988, Saddam Hussein used chemical bombs against his own people to put down a rebellion.<sup>25</sup> There are dangerous people with dangerous weapons in our future -- and our present.

From the beginning of Desert Shield, the chemical weapons of Saddam Hussein had been the major concern. As stated earlier, Patriot's early introduction into Saudi Arabia was to meet the threat of chemical weapons delivered by the SCUD missile. In the first days of Dessert Storm, the SCUD missiles used on Israel and Saudi Arabia were conventional. But the fear seen on television reports from Riyadh during the SCUD attacks, was generated by the chemical threat -- not the conventional threat. Patriot was so successful in Saudi Arabia that a battalion was moved to Israel for protection against the SCUD threat.

But there was much more to the Iraqi air threat than the missile delivered chemical threat. The U.S. Army Intelligence and Threat Analysis Center in conjunction with the U.S. Army Intelligence Agency published threat and "how they fight" books. The books identified five air frames capable of ground attack/close air support ranging from the older SU-17 Fitter to the MIG-23 Flogger and the French-made F-1 Mirage. Additionally, the books discussed five attack helicopters with the MI-24 HIND-D being the most formidable. Although Iraqi doctrine is similar to the Soviet's, Iraq refined, adapted, and perfected it during the war with Iran. The capability, uncontested, would have been a significant threat to a U.S.

forces' ability to have freedom of maneuver.<sup>26</sup> Other countries have similar potential in quality if not in quantity. How well we convey this credible threat to Congress will go a long way in determining what resources will be available.

## MOBILITY

In his 1990 report to the President and Congress, Secretary Cheney stated, "The rapid projection of military power to protect security interests around the globe is a vital component of the U.S. defense strategy. In wartime, the United States must be able to reinforce its forward-deployed forces and support allies, while countering threats in other regions important to U.S. security. In peacetime, it must be able to project power and influence in regions of U.S. and allied interest where U.S. forces are not routinely stationed."<sup>27</sup> The tremendous deployments in support of Operation Desert Shield clearly support Secretary Cheney's statements. As stated earlier, the U.S. does not possess the strategic lift it currently requires. The Air Force employed 94 per cent (89) of the C-5 fleet and 89 per cent (195) of its aging C-141 fleet.<sup>28</sup> The Navy employed all eight of its fast-sealift ships plus at least 40 ships from the Ready Reserve Fleet.<sup>29</sup> The government even leased Saudi Arabian roll-on/roll-off ships,



some, ironically, with Palestinian crews. Those assets cannot move a contingency corps with two heavy divisions to a theater like Saudi Arabia in less than 30 days. Even with the relative shortage of lift and the tremendous competition for the assets, air defense got some early priority. As stated earlier, the first Patriot equipment departed Ft. Bliss only ten days after the Iraqi invasion, and ships carrying 11th Brigade equipment departed Texas ports beginning 1 September.<sup>30</sup> Corps air defense brigades have not always been high on the deployment priority list. The confusion on the mission of the 11th AD Brigade has caused the XVIII AB Corps to give less priority to the brigade. Only aggressive work by the brigade staff got the units moved as early as they did. While Desert Shield became a basically deliberate deployment, had Iraq chosen to use SCUDS or air power early against air fields and port facilities, lack of air defense would have proven to be a critical, if not fatal, shortfall. As the Pentagon pursues improved force projection in the form of the new C-17 and additional fast-sealift, air defense must pursue ways to improve deployability. Any air defense system requiring modernization must show an increase in effectiveness in relationship to improved strategic mobility and possibly decreased manning. Hawk has a significant mobility enhancement package competing for funding.<sup>31</sup>

The new family of Forward Area Air Defense (FAAD) considered tactical and strategic mobility during development. The Pedestal Mounted Stinger (Avenger), which will replace the Chaparral and man portable (MANPADS) Stinger, provides great strategic/tactical mobility with a significant increase in firepower. A current MANPADS Stinger team requires a HMMWV and has six missiles available. The Avenger also uses a HMMWV but has eight ready missiles, a Forward Looking Infrared Radar (FLIR), and can shoot on the move. Patriot, although physically larger than Hawk and less tactically mobile, is roughly equal in strategic mobility and provides more fire power (greater simultaneous engagements) and the ability to deal with tactical ballistic missiles (TBM).<sup>32</sup> The Avenger, the Hawk, and the Patriot systems are, and will continue to be, the heart of the corps air defense brigades.

#### EMERGING DOCTRINE

USAADSCH, in addition to the already mentioned FM44-71, published a preliminary draft, FM 44-85, Patriot Battalion and Battery Operations, in early 1990. Neither document included Patriot as a corps asset. Although the USAADSCH fixed that structure shortcoming in the updated TAA 99 process, their

doctrine writers must become part of the solution and incorporate Patriot operations and capabilities in the corps doctrine.

Although the contingency corps may go into an established theater, deployments in "short-duration, limited objective conflicts will occur in areas where no U.S. bases exist."<sup>33</sup> Doctrine writers visualize a four-phase operation beginning with deployment (Phase I) followed by lodgment (Phase II), the expansion of the logistics base and the build-up of forces (Phase III), and the termination of the conflict (Phase IV).<sup>34</sup> Air defense is obviously critical to each phase. USAADSCH has produced a series of slides that illustrate a notional deployment into a contingency area. Referred to as "Expanding Torrent", the series depicts an operation that begins with employment of Stinger, expands the lodgement with the addition of Hawk and Patriot (shown in these slides as an EAC battalion task force but revised doctrine should change that to a corps brigade task force), and continues through combat operations ending with conflict termination. This pattern differs slightly from Desert Shield deployments. The major difference between the emerging doctrine and Desert Shield is the heavy emphasis on early introduction of Patriot to counter the Iraqi tactical ballistic missile threat.

The deployed corps brigade will participate not only in the defensive counterair (DCA) battle but also will provide input into the targeting process for the offensive counterair (DCA) battle. The corps air defense brigade commander supports the corps deep battle during the OCA targeting cycle. The USAADSCH has developed a template to assist air defense commanders in identifying potential deep attack targets. These targets are part of OCA and include aircraft on the ground, support facilities such as airfields, navigational points, forward refuel points, and command and control facilities.<sup>35</sup> The DCA battle is the more traditional role associated with air defense weapons systems and is intended to provide the ground commanders with the freedom to maneuver.

FM 44-71 points out a critical aspect of contingency operations. Because of their ability to project forces more rapidly, Navy, Marine, and Air Force air defense forces will likely be in theater concurrent with or before the arrival of Army air defense forces.<sup>36</sup> This requires extensive coordination/liaison between the various forces. Unfortunately, the most recent table of organization and equipment (TOE) for the brigade headquarters does not include sufficient liaison/coordination personnel to service all the potential requirements. In 1986, the then Chief of Staff of

the Army, Gen. John Wickam, directed that the Army downsize 10,000 spaces, while resourcing the new light divisions. In order to accomplish that directive, Army wide TOE's were scrubbed to eliminate officer authorizations. All liaison and many assist staff positions were identified for elimination and/or use in the new divisions. The current lack of liaison capability is a result of those 1986 decisions. In an environment of force structure cuts, resourcing liaison spaces will be a difficult task. There is a coordination cell to operate in the corps headquarters to serve as the corps commander's immediate staff representative, but there is no capability to go to the Marine or Air Force control center. This is a critical shortfall.

In May 1990, the 11th AD Brigade conducted exercise Roving Sands 90, the largest joint air defense exercise in history. The massive mock battle, conducted in the deserts of western Texas and southern New Mexico, included Army Patriot and Hawk, Marine Hawk, Army and Marine Stinger, a Marine tactical air control center (TACC) and tactical air operations center (TAOC), Air Force fighters and bombers (including B-52's), and Navy and Marine fighter and ground attack aircraft. In hindsight, it was in effect a rehearsal for Desert Shield/Storm. Face to face liaison in that exercise was the key to

success. Marine air operations differ from that of the Air Force. While the Air Force believes in centralized control at the theater level, the Marine Corps' control of their air assets is at the operational level. This difference is important because the Marine Corps employs air as an integral player in the combined arms battle. The significance is that the theater air war is potentially controlled from two separate control centers - the Air Force Command Reporting Center (CRC) and the Marine TACC/TAOC - requiring the brigade to communicate or liaison with both. Although Army - Air Force communications through the CRC is not a problem, RS 90 proved that Army communications equipment is not directly compatible with that in the Marine TACC/TAOC. Liaison was done by taking personnel required for other jobs, deploying with Army radios, and accomplishing the mission in that manner. Liaison in Desert Storm was accomplished as it was in Roving Sands. While that worked in Roving Sands, it is not the answer. The answer is authorized liaison spaces in the TOE so that they can train for the job.

In addition to the shortcoming at the corps level, there is no staff section authorized on the TUSA staff. The 11th Brigade had an officer working at TUSA at the start of Desert Shield. The 11th AD Brigade deployed with the mission of

supporting TUSA and XVIII AB Corps. The brigade could not execute both missions and had to be augmented by personnel from the USAADSCH.<sup>37</sup> With TAA 99 resourcing three theater air defense brigades and an EAC AADCOM, future deployments of this magnitude will see, at a minimum, a theater brigade deployed with the corps brigade in order to give the theater as well as the corps commander dedicated air defense assets for planning and execution.

Logistical support is another area that is of concern for the air defense brigade. Under the current system, each battalion has dedicated support. The Patriot battalions have ordnance companies that are primarily designed for conventional support. The Hawk battalions have ordnance companies designed for both conventional and Hawk systems peculiar support but fully resourced only for the Hawk peculiar support. The current Vulcan/Stinger (11th AD Brigade only) and Chaparral (to be replaced by Avenger) battalions have system peculiar support detachments. There is a significant potential for force structure savings. The ordnance companies for the Patriot and the Hawk battalions have duplication and should be combined into a single company. That company also could incorporate the future Avenger detachments. The company should be a separate company working directly for the brigade executive officer.

Contact teams would be organized on a permanent basis for each battalion. These contact teams would go with the supported battalion in both training and real world deployments. The savings in structure would be realized from the administrative portion of each company and, to a lesser extent, the detachments. The use of dedicated contact teams ensures that proper support is maintained.

#### CONCLUSIONS/RECOMMENDATIONS

The key to the future of air defense will be its ability to respond to the requirements of the various warfighting CINC's. With that in mind, the USAADSCH appears to have the organization piece well in hand. The most recent proposals provide the right mix of weapons - Patriot, Hawk, and Avenger - and a command and control structure that represents an improvement over the current structure.

That doesn't mean that all is right with the world. There are three areas that need immediate attention.

While providing the corps commander and the CINC his dedicated air defense brigade solves much of the current command and control problem, it does nothing to solve the coordination problems that we identified earlier. The structure of the brigade headquarters still lacks sufficient



liaison capability. The USAADSCH must look across the force to find acceptable bill payers to resource the liaison spaces. The requirement will not go away. Desert Storm has proven that. If we don't resource the requirement, we will continue to accomplish the mission out of hide diminishing our capability in some other area.

The second area that should be addressed is the support structure of the brigade. The current structure with a company dedicated to each battalion provides great support. The problem here is efficiency. Each company has similar overhead and therefore significant duplication. The spaces in these organizations are the responsibility of the Ordnance branch. Their force structure analysts should redesign a company that has support teams for each weapon system but with a common company headquarters. The company headquarters would have the capability to provide direct support maintenance for conventional equipment (trucks, generators, etc.) and communications equipment for the entire brigade. In a shrinking Army, there are the types of efficiencies that need to be identified.

The final area of concern goes back to the USAADSCH. Doctrine currently doesn't incorporate Patriot in the corps brigade. Appropriate doctrine exists to fight a Patriot battalion and a corps brigade. The USAADSCH doctrine writers

must fix this immediately. The normal process to produce a doctrinal manual can take years. Faced with writing doctrine to align with Airland Battle Future, the near term doctrine problem may be pushed aside. This should not happen.

## ENDNOTES

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